



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,826	09/10/2003	Sudhakar K. Rao	091-0201	5968
27431	7590	09/28/2005	EXAMINER	
SHIMOKAJI & ASSOCIATES, P.C. 8911 RESEARCH DRIVE IRVINE, CA 92618			DINH, TRINH VO	
			ART UNIT	PAPER NUMBER
			2821	

DATE MAILED: 09/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/659,826

Applicant(s)

RAO ET AL.

Examiner

Trinh Vo Dinh

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on amendment filed 08/03/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4-8 and 10-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2,4-8,10-22 and 27-40 is/are allowed.
- 6) ☒ Claim(s) 23-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This is a response to amendment filed 08/03/05. In view of a further search, a new rejection is set forth below. This action is not made final.

#### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 23-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Luly et al (US 2003/0122723).

With respect to claim 23, Luly discloses, in Fig. 3 and abstract, an antenna system (10) comprising a plurality of high-efficiency multi-mode circular horns (48), wherein said feed array being focused at a lowest frequency band (paragraph [0034]), and said feed array is defocused at an intermediate band and a highest frequency band (paragraphs [0022], [0034]).

With respect to claims 24-25, the recitations “said feed array is defocused by 0.25 inch at EHF-band”, “said feed array is defocused by 0.1 inch at Ka-band, and said feed array is focused at K-band”, “said feed array broadens an EHF beam and a Ka beam from 0.4 degrees to 0.5 degrees, and said feed array forms a 0.5 degree beam at K-band” are not structural limitations to define over prior art that meet the claimed structural limitations. In order to extinguish from the

Art Unit: 2821

prior art, functional recitations must be recited with structures for performing the specified functions.

3. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Luly in view of Judasz (US 2002/0190911 A1 of record).

Luly discloses every feature of the claimed invention except a specific structure of the horn. Judasz discloses a horn (11 in Figs. 1-2) has an aperture diameter and a waveguide diameter, said horn has a first step, between said aperture diameter and said waveguide diameter, at which the diameter of the circular cross-section of said horn abruptly changes, said horn has a second step, between said first step and said waveguide diameter, at which the diameter of the circular cross-section of said horn abruptly changes. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Luly's antenna system with the feed horn as taught by Judasz in order to minimize the length of horn antenna at the desired operational bandwidth and provide low sidelobes and low cross polarization, over a relatively wide bandwidth, with high electrical efficiency.

***Allowable Subject Matter***

4. Claims 1-2, 4-8, 10-22, 27-40 are presently allowed.

5. The following is a statement of reasons for the indication of allowable subject matter:

The cited art of record fails to teach multi-beam, multi-band feed array comprising

a) a feed array forms a plurality of multi-band beams wherein each of the beams being formed by a single horn, propagating signals over at least three frequency bands and being congruent and contiguous as defined in claims 1, 10, 29 and 39, or b) the feed horns are placed on a spherical cap with a radius of a distance from an aperture center of said reflector to said

Art Unit: 2821

focal point, said radius of said spherical cap centered at the aperture center as defined in claim 12, or c) a compact 6-port OMT/polarizer wherein said feed array provides dual-circular polarization capability at each of three distinct frequency bands as defined in claims 13, 27-28, and 39, or d) the reflector is oversized at an intermediate frequency band in that a reflector having aperture D with unmodified paraboloid shape produces a beam size at the intermediate frequency band that is smaller than the required beam size as defined in claim 15, or e) the reflector is sized to have an aperture D according to  $D = 70 \times (\text{wavelength (at 20.2 GHz)}) / (\text{half-power beam-width})$  to produce said required beam size at a K-band frequency as defined in claim 22.

### *Inquiry*

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trinh Vo Dinh whose telephone number is (571) 272-1821. The examiner can normally be reached on Monday to Friday from 9:30AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong, can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/659,826

Page 5

Art Unit: 2821

*Art unit 2821*

A handwritten signature in black ink, appearing to read 'Trinh Vo Dinh', followed by a long horizontal line extending to the right.

*Trinh Vo Dinh*

*February 07, 2005*